

IDAHO DEPARTMENT OF FISH AND GAME

Jerry M. Conley, Director

**FEDERAL AID IN FISH RESTORATION
1992 Job Performance Report
Project F-71-R-17**



REGIONAL FISHERIES MANAGEMENT INVESTIGATIONS

Job No. 2-a.	Region 2 Mountain Lakes Investigations
Job No. 2-b.	Region 2 Lowland Lakes and Reservoirs Investigations
Job No. 2-c.	Region 2 Rivers and Streams Investigations
Job No. 2-d.	Region 2 Technical Guidance

By

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JOB PERFORMANCE REPORT

State of: Idaho

Name: Regional Fisheries
Management Investigations

Project: F-71-R-17

Title: Region 2 Mountain Lakes
Investigations

Job: 2-a

Period Covered: July 1, 1992 to June 30, 1993

ABSTRACT

Conservation officers and volunteers surveyed 29 lakes in Region 2 in 1991 and 1992. Survey results indicate the regional stocking program is suitable in the lakes that were surveyed and the stocking program is providing fishable populations of trout. Middle Dennis Lake still supports a remnant population of grayling from a 1968 introduction.

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TEXT

OBJECTIVES

1. Evaluate the success and suitability of the mountain lake stocking program in Region 2.
2. Modify stocking rate on species stocked to produce higher quality fisheries where necessary.
3. Collect lake-specific fish and fisheries related survey information upon which to base management decisions.
4. Train volunteers to survey lakes using a standardized data collection form.

METHODS

We developed two standardized data collection forms, one for anglers visiting lakes during their back country excursions, and another more in-depth form for conservation officers and trained volunteers.

We had a training session for volunteers. We covered topics such as lake morphometry, determining spawning habitat suitability, fish identification, aquatic and terrestrial insect identification, and low impact camping.

Conservation officers were briefed on how to correctly record data and were given background information on the lakes they were to survey. The officers were directed to lakes that are currently being stocked on a three-year rotation, but had not been recently surveyed to determine the success of stocking.

RESULTS

Conservation officers surveyed 16 lakes in Region 2 in 1992 (Table 1). Thirteen of these lakes are currently in the regional stocking program. Survey results show all of these lakes providing fishable populations of trout as a result of the stocking program. Two lakes, North and South Spruce, may require a reduction in stocking rate to improve fish condition.

Catch rates during lake sampling varied from 0.5 to 37 fish/h and fish size ranged from 50 mm to 500 mm.

Middle Dennis Lake survey results showed a remnant population of grayling Thymallus arcticus existing from a 1968 stocking.

TEXT

Table 1. Results from mountain lake surveys performed by conservation officers in Region 2 in 1991.

Lake	Catalog #	Date surveyed	Current stocking program	Spawning potential	Primary species	Secondary species	Catch per hour	Size range (mm)	Comments
Williams	06 0340	7/23/91	Y	low	CT		37.0	200-250	outfitter camp
Lower Post Office	06 0253	7/27/91	Y	none	CT		0.5	50-200	observed small fish
Rudd	06 0323	9/18/91	Y	fair	CT		3.0	250-500	moose activity
Moore	06 0322	9/18/91	Y	fair	CT		4.0	150-250	moose activity
North Spruce	06 0329	8/14/91	Y	fair	CT		1.7	150-250	may be overstocked
South Spruce	06 0330	8/14/91	Y	fair	CT		2.2	100-250	may be overstocked
Beaver #2	06 0327	8/11/91	Y	poor	CT		5.5	150-350	stocking required
Thirteen #1	06 0607	8/22/91	Y	poor	CT		25.0	200-450	good condition
Thirteen #2	06 0608	8/22/91	Y	fair	CT	RB	30.0	150-300	may be overstocked
Lake Creek	06 0610	8/22/91	Y	poor	CT		16.0	200-250	reduce stocking to 500
Stripe #1	06 0611	8/23/91	Y	poor	CT		20.0	145-280	excellent condition
Stripe #2	06 0612	8/23/91	Y	poor	CT		10.0	220-380	excellent condition
Swet	06 0606	8/24/91	Y	poor	CT		4.0	110-260	potential natural recruitment
Hungry	06 0260	8/7/91	N	fair	CT	RB	6.8	200-350	nat. repro. cutthroat
Middle Dennis	06 0296	8/25/91	N	fair	GR	RB	5.0	155-280	GR from 1968 plant
West Dennis	06 0298	8/25/91	N	poor	--	--	--	--	barren

Volunteers surveyed 13 lakes in Region 2 in 1991 and 1992 (Table 2). Six of the 13 lakes surveyed are in the regional stocking program. Cub Lake is the only one of the stocked lakes that exhibits signs of natural reproduction. Of the seven lakes not in the regional stocking program, four have naturally reproducing populations of eastern brook trout Salvelinus fontinalis, one has a native population of cutthroat trout Oncorhynchus clarki ranging in size from 150 mm to 400 mm, and the other two are barren. Catch rates varied from 0.25 to 10 fish/h.

RECOMMENDATIONS

1. Reduce the number of cutthroat trout stocked in North and South Spruce lakes to 1,000 each, every three years. Next stocking year is 1994.
2. Postpone stocking in Cub Lake to determine the level of natural reproduction.
3. Increase volunteer survey effort.

Table 2. Results from mountain lake surveys performed by volunteers in Region 2 in 1991 and 1992.

Lake	Catalog #	Date surveyed	Current stocking program	Use	Primary species	Secondary species	Catch per hour	Size range (mm)	Comments
Duck	06 0306	8/24/91	Y	moderate	CT		1.0	350-399	low abundance
Parsons	06 0368	8/16/91	N	low	BT		10.0	150-299	
Lower Cove	06 0346	8/16/91	N	moderate	BT		8.0	150-200	
Upper Cove	06 0347	8/16/91	N	moderate	BT		7.0	200-250	
Colt Cr. #6	06 0287	1991	Y	low	CT		6.0	200-350	
Emerald	06 0480	9/3/92	Y	low	CT		5.0	300-350	
Bills	06 0481	9/3/92	Y	low	CT		4.0	300-350	
Bills	06 0481	7/5/92	Y	low	CT		8.0	300-400	
Brush Fork	06 0484	9/2/92	Y	low	CT		7.0	300-350	
Sting Ray	06 0488	9/2/92	N	low	n/a		--	--	barren/shallow
Cub	06 0490	9/1/92	Y	low	RB	CT	6.0	300-400	
Goose	06 0196	1992	N	low	n/a		--		barren/shallow
Walton #2	06 0267	1992	N	moderate	CT		0.3	150-250	
Rock	06 0234	7/5/91	N	heavy	BT		6.0	150-200	

JOB PERFORMANCE REPORT

State of: Idaho

Name: Regional Fisheries
Management Investigations

Project: F-71-R17

Title: Region 2 Lowland Lakes
Investigations

Job: 2-b

Period Covered: July 1, 1992 to June 30, 1993

ABSTRACT

Idaho Fish and Game personnel stocked 127,840 catchable trout in six Region 2 lowland lakes in 1992. We checked 576 anglers who fished 1,228 hours to catch 992 game fish in Region 2 lowland lakes.

Standard lake surveys in Moose Creek Reservoir indicated the fish community to be virtually unchanged since 1985 (Apperson 1987). Game fish dominate the fish community with 99.1% of the fish and 94.8% of fish biomass. Excessive aquatic macrophytes continue to be the limiting factor in game fish production and angler enjoyment at Moose Creek Reservoir.

Standard lake surveys in Elk Creek Reservoir indicate a strong population of largemouth bass Micropterus salmoides that are relatively fast-growing. Eastern brook trout Salvelinus fontinalis are also abundant in Elk Creek Reservoir. Non-game fish accounted for 21% of the fish community, numerically and by biomass.

Fingerling rainbow trout stocked in Winchester Lake, Spring Valley Reservoir, and Soldiers Meadow Reservoir represented 65.3%, 80.8%, and 90.0% of spring gill net samples, respectively. Growth rates ranged from a high of 0.8 mm/day in Winchester Lake to a low of 0.2 mm/day in Spring Valley Reservoir.

Bluegill Lepomis macrochirus introduction and regulation changes for Spring Valley Reservoir have increased the percent of largemouth bass over 12 inches (305 mm) from less than 1% from 1983 through 1991 to 4.5% in 1992.

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TEXT

OBJECTIVES

1. Perform standard lowland lake surveys on Moose Creek Reservoir and Elk Creek Reservoir and describe fish communities.
2. Evaluate growth, relative abundance, composition in the creel and catch rates of fingerling rainbow trout stocked in lowland lakes.

METHODS

We performed standard fish community surveys in Elk Creek Reservoir and Moose Creek Reservoir using standard survey procedures (Appendix A).

We sampled fish in lowland lakes using pulsed DC current from a portable generator and a Coffelt VVP-2E pulsator. Booms and electrodes were mounted on a 16-foot john boat. All electrofishing took place between 2000 hours and 0200 hours. We sampled trout and kokanee Oncorhynchus nerka in lowland lakes with gill nets. We used standard floating experimental gill nets 150 ft long by 6 ft deep with six panels of different size mesh. Mesh sizes were 1/2 inch, 3/4 inch, 1 inch, 1-1/4 inch, 2 inches, and 2-1/2 inches. One or two nets were set and fished from late afternoon until early morning. Total net hours were recorded with the catch.

Age and growth estimates were made from scale analysis. Scales were dried and cleaned. Impressions were made in acetate slides using a heated press. Impressions were read on a microfiche reader. Where possible, five scales from each centimeter of the length distribution were read. This age distribution was applied to the total length distribution sample to produce a population age frequency.

Creel survey checks were made by regional fishery management staff and conservation officers. We recorded the number of anglers, total hours fished, and species or type of fish caught. Lengths of species or types of fish were also recorded. The ecology class from Troy High School also performed creel surveys on Spring Valley Reservoir during April and May.

To differentiate stocking groups in the creel, we marked Spokane strain rainbow trout O. mykiss (RS) with an adipose fin clip and domestic Kamloops rainbow trout (K1) with a left ventral fin clip prior to stocking. Early spawning kokanee (KE) and cutthroat/rainbow trout hybrids were identified by visual observation. Catchable rainbow trout (HRB) were identified by sight, mostly by visible fin erosion. Wild/natural rainbow trout (WRB) were also identified by sight, generally with no signs of fin deformity or erosion.

TEXT

RESULTS

General

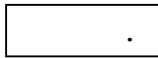
Idaho Department of Fish and Game personnel stocked 127,840 catchable trout in six Region 2 lowland lakes in 1992 (Table 1).

Region 2 fishery management personnel, conservation officers, and volunteers checked 576 anglers at seven Region 2 lowland lakes and reservoirs in 1992. These anglers had fished 1,228 hours to catch 992 game fish, a catch rate of 0.8 fish/h. The catch consisted of 85% trout, 7% kokanee, and 8% warmwater species (Table 2).

Standard Lake Surveys

Moose Creek Reservoir

Moose Creek Reservoir is located in Latah County eight miles northwest of the city of Bovill. Moose Creek Reservoir is the site of an abandoned clay mining operation. The reservoir is located on ground owned by the Idaho Department of Lands. Latah County Recreation District manages camping and day use recreation on approximately 70 acres surrounding the 27-acre reservoir.

 The reservoir was last drained in 1978. Idaho Department of Fish and Game stocks catchable-size rainbow trout in the spring (Table 1) and fingerling rainbow trout in the fall. Other fish species that inhabit Moose Creek Reservoir include largemouth bass Micropterus salmoides, black crappie Pomoxis nigromaculatus, bluegill Lepomis macrochirus, pumpkinseed L. gibbosus, black bullhead Ameiurus melas, and largescale sucker Catostomus macrocheilus Brook trout Salvelinus fontinalis and speckled dace Rhinichthys osculus are also reported to inhabit Moose Creek Reservoir (Apperson 1987), but none were observed during this year's survey.

Moose Creek Reservoir has a maximum depth of 13 feet and a wide littoral zone. Approximately 90% of the reservoir is less than 8 feet deep. A large portion (80-90%) of the reservoir is vegetated with a dense growth of aquatic macrophytes. Moose Creek Reservoir is currently being managed for trophy bass production with a two fish daily limit and a minimum length limit of 20 inches.

Six species of game fish combined to produce 99.1% of the total catch and 94.8% of the catch biomass. Pumpkinseed were the most abundant game fish, accounting for 41.8% of the total catch (Table 3).

Rainbow trout represented 13.2% of the total catch. This relatively high percentage is attributed to catchable trout stocking in April and May (Table 1).

TEXT

Table 1. Catchable trout stocking in 1992.

Lowland lake	April	May	June	July	August	September	October	Total
Winchester Lake	10,200	7,500	7,500	--	--	1,080	8,850	35,130
Spring Valley Res.	7,480	7,500	7,500	--	--	1,080	9,120	32,680
Mann Lake	10,200	7,500	7,500	--	--	--	7,500	39,500
						--	^a 6,800	
Soldiers Meadow Res.	--	3,000		--	--	--	--	3,000
Elk Creek Res.	--	2,505	5,640	--	--	--	4,360	12,505
Moose Creek Res.	2,520	2,505	--	--	--	--	--	5,025
								127,840

^slake trout

Table 2. Summary of creel survey findings for Region 2 lowland lakes and reservoirs, 1992.

Lowland lake	Anglers	Total hours	RBT	RS	K1	RC	LKT	BKT	BT	KOK	LMB	SMB	CRA	BG	CAT	Total	CPUE
Spring Valley Res.	179	379	258	70	50	0	0	0	0	0	0	0	0	13	0	391	1.03
Winchester Lake	266	601	256	68	6	10	0	0	0	0	1	0	0	0	12	353	0.58
Soldiers Meadow	36	66	28	3	0	0	0	0	0	3	0	0	0	0	0	34	0.51
Mann Lake	14	35	17	1	0	0	17	0	0	0	0	0	0	0	0	35	1.00
Elk Creek Res.	17	31	26	0	0	0	0	2	0	0	0	0	0	0	0	28	0.90
Moose Creek Res.	40	70	30	0	0	0	0	0	0	0	0	0	0	38	0	68	0.97
Dworshak Reservoir	24	47	0	0	0	0	0	0	1	67	0	15	0	0	0	83	1.78
Total	576	1,228	615	142	56	10	17	2	1	70	1	15	0	51	12	992	0.80

RBT = rainbow trout
RC = rainbow x cutthroat hybrid
BT = bull trout
SMB = smallmouth bass
CAT = catfish

RS = Spokane strain rainbow trout
LKT = lake trout
KOK = kokanee
CRA = crappie

K1 = domestic Kamloop rainbow trout
BKT = brook trout
LMB = largemouth bass
BG = blue gill

Table 3. Moose Creek Reservoir standard survey findings of fish community characteristics, June 1, 1992.

Catch per unit of combined gear sampling effort*					
Species	Length-range (mm)	No.	%	Weight (kg)	%
Game Fish					
Largemouth bass	60-509	59.5	15.8	4.8	22.6
Bluegill	60-199	61.0	16.2	2.7	12.7
Black crappie	90-239	35.5	9.4	0.4	1.9
Pumpkinseed	60-159	157.0	41.8	3.9	18.7
Rainbow trout	110-319	49.5	13.2	5.6	26.4
Black bullhead	210-349	10.0	2.7	2.6	12.3
	Subtotal	372.5	99.1	20.07	94.8
Non-Game Fish					
Largescale sucker	250-359	3.0	0.9	1.1	5.2
	Subtotal	3.0	0.9	1.1	5.2
All Species Total		375.5	100	21.2	100

*One hour electrofishing, one trap net night, and one combined floating and sinking gill net night

Largemouth bass and black crappie represented 15.8% and 9.4% of the catch, respectively (Table 3). After rainbow trout, these are the two most highly sought after game fish in Moose Creek Reservoir. Largemouth bass had a Proportional Stock Density (PSD) of 40. However, less than 1% (1/119) of the sample was represented by legal size (20-inch minimum) bass. Relative weights for largemouth bass were favorable, generally in the high 90s to the 110% range (Table 4). Length at annuli back-calculated for largemouth bass (Table 5) was consistent with regional averages and similar to results from Moose Creek Reservoir in 1985 (Apperson 1987).

Black crappie represent the smallest segment of the game fish community and comprise only 1.9% of the total biomass in the sample (Table 3). Numbers of crappie are low, likely due to predation by largemouth bass on younger crappie and exploitation by anglers on older crappie. Both angler exploitation and predation are likely exaggerated on crappie in Moose Creek Reservoir due to the limited open water areas. Relative weight of crappie is low (below 90%) for size groups above 7.8 inches (200 mm) (Table 6). Crappie also exhibit stunting as age 4 fish are 8 inches (200 mm) (Table 7).

Bluegill represent 16.2% of the Moose Creek Reservoir fish community sample. Bluegill are somewhat desirable to anglers as they attain lengths of 7.5 inches (190 mm). Bluegills display relative weights generally less than 100 (Table 8), probably as a result of competition with pumpkinseeds. Pumpkinseeds are not sought by anglers as their maximum size is 6 inches (150 mm) (Table 9).

Bluegill and pumpkinseed are the main forage base for largemouth bass in Moose Creek Reservoir. Combined, these prey species represent nearly 60% of the fish community and 32% of the biomass. Length at annuli indicates some level of stunting in both these prey species (Tables 10 and 11). Stunting and overabundance are a result of prolific aquatic macrophyte growth and a resulting decreased interaction with a predator.

The fish community, as well as anglers, could benefit by creation of additional year-round open water areas in Moose Creek Reservoir (Appendix B).

Elk Creek Reservoir

Elk Creek Reservoir is located in Clearwater County near the town of Elk River. It was originally constructed by Potlatch Corporation as a log holding pond. The original dam washed out in 1937, but was reconstructed in 1950. The reservoir was chemically treated in October 1950, prior to refill behind the new dam. The dam and spillway were reconstructed most recently in 1987 by the Idaho Department of Fish and Game (IDFG). IDFG owns the land surrounding Elk Creek Reservoir. The Elk River Recreation District leases IDFG land and manages overnight camping and day use recreation on the reservoir.

The reservoir has a surface area of 34 acres and a volume of approximately 900 acre-feet. IDFG stocks catchable-size rainbow trout in Elk Creek Reservoir

TEXT

Table 4. Catch composition of largemouth bass from Moose Creek standard survey, June 1, 1992.

Length range (mm)	No. per unit effort	Percent of sample	Mean weight (grams)	Relative weight	Ages
50	0	0	--	--	--
60	2.0	3.3	NA	NA	1+
70	2.5	4.1	NA	NA	1+
80	0.5	0.8	NA	NA	1+
90	0.5	0.8	NA	NA	1+
100	0.5	0.8	15.00	110	1+,2+
110	4.5	7.4	17.60	97	1+,2+
120	6.5	10.7	20.40	86	1+,2+
130	4.5	7.4	29.75	98	2+
140	4.5	7.4	37.40	98	2+
150	10.0	16.5	42.40	90	2+
160	6.5	10.7	44.00	76	2+,3+
170	2.5	4.1	68.33	98	2+,3+
180	0.5	0.8	100.00	121	3+
190	1.5	2.5	97.50	99	3+
200	0.5	0.8	120.00	104	3+
210	0.5	0.8	140.00	105	3+
220	1.0	1.7	147.50	95	3+
230	1.0	1.7	185.00	104	3+,4+
240	0.5	0.8	250.00	123	3+,4+
250	0.5	0.8	210.00	91	3+,4+
260	2.0	3.3	279.20	107	4+
270	0.5	0.8	320.00	109	4+
280	1.0	1.7	350.00	106	4+
290	0	0	---	--	--
300	1.5	2.5	460.00	113	5+
310	0.5	0.8	510.00	113	5+
320	0.5	0.8	550.00	110	5+
330	0	0	--	--	--
340	1.0	1.7	600.00	99	6+
350	0	0	--	--	--
360	0	0	--	--	--
370	0	0	--	--	--
380	0	0	--	--	--
390	0.5	0.8	935.00	100	5+
400	0	0	--	--	--
410	0	0	--	--	--
420	0	0	--	--	--
430	0	0	--	--	--
440	0	0	--	--	--
450	0	0	--	--	--
460	0.5	0.8	NA	NA	NA
470	0.5	0.8	1,850.00	110	6+
480	0	0	--	--	--
490	0.5	0.8	NA	NA	NA
500	0.5	0.8	2,200.00	108	7+

Table 5. Back-calculated length at annuli of largemouth bass from Moose Creek Reservoir, June 1, 1992.

Age group	Number aged	----Backcalculated length (mm) at each annulus --- at							Length at capture
		1	2	3	4	5	6	7	
I	5	68.5	0	0	0	0	0	0	115.2
II	20	68.4	117.2	0	0	0	0	0	143.0
III	15	72.1	124.9	169.7	0	0	0	0	181.5
IV	8	80.3	137.2	188.8	238.4	0	0	0	251.6
V	10	82.6	137.7	190.9	239.8	289.2	0	0	299.3
VI	2	79.2	132.2	182.6	236.5	300.7	354.3	0	361.5
VII	1	77.3	142.7	198.9	271.5	394.9	434.8	458.4	462.0
Average length		73.7	126.8	181.3	240.4	299.1	381.1	458.4	
# aged		61	56	36	21	13	3	1	

Table 6. Catch composition of black crappie from Moose Creek Reservoir standard survey, June 1, 1992.

Length range (mm)	No. per unit effort	Percent of sample	Mean weight (grams)	Relative weight
50	0	0		
60	0	0	--	--
70	0	0	--	--
80	0	0	--	--
90	0.5	1.4	10.00	101
100	0.5	1.4	12.00	86
110	0	0	--	--
120	0	0	--	--
130	0	0	--	--
140	2.0	5.6	44.00	108
150	8.5	23.9	53.20	104
160	6.5	18.3	67.20	107
170	7.0	19.7	74.40	97
180	2.5	7.0	90.00	97
190	1.5	4.2	105.00	95
200	2.5	7.0	126.00	97
210	2.0	5.6	136.67	89
220	1.5	4.2	153.00	86
230	0.5	1.4	172.00	84
240	0	0	--	--
250	0	0	--	--

Table 7. Back-calculated length at annuli of black crappie from Moose Creek Reservoir, June 1, 1992.

Age group	Number aged	---- Backcalculated length (mm) at each annulus							Length at capture
		1	2	3	4	5	6	7	
I	0	0	0	0	0	0	0	0	0
II	2	59.8	88.5	0	0	0	0	0	101.5
III	28	66.2	116.2	158.2	0	0	0	0	172.3
IV	8	68.2	120.6	169.8	203.2	0	0	0	218.1
V	1	68.0	121.3	168.7	192.3	210.1	0	0	216.0
VI	0	0	0	0	0	0	0	0	0
VII	0	0	0	0	0	0	0	0	0
Average length		66.3	115.8	160.9	202.0	210.1	0	0	
# aged		39	39	37	9	1	0	0	

Table 8. Catch composition of bluegill from Moose Creek Reservoir standard survey, June 1, 1992.

Length range (mm)	No. per unit effort	Percent of sample	Mean weight (grams)	Relative weight
50	0	0	--	--
60	1.0	1.5	NA	NA
70	1.5	2.3	NA	NA
80	11.5	17.3	8.80	83
90	3.5	5.3	13.33	87
100	1.5	2.3	16.00	75
110	1.5	2.3	28.67	100
120	8.0	12.0	32.60	86
130	15.5	23.3	43.60	89
140	13.5	20.3	53.60	86
150	5.5	8.3	73.60	95
160	1.0	1.5	90.00	94
170	0	0	--	--
180	1.5	2.3	127.67	92
190	1.0	1.5	148.00	89
200	0	0	--	--
210	0	0	--	--
220	0	0	--	--
230	0	0	--	--
240	0	0	--	--
250	0	0	--	--

Table 9. Catch composition of pumpkinseed from Moose Creek Reservoir survey, June 1, 1992.

Length range (mm)	No. per unit effort	Percent of sample	Mean weight (grams)
50	0	0	--
60	9.0	5.8	NA
70	7.0	4.5	NA
80	13.5	8.6	NA
90	29.0	18.5	NA
100	40.0	25.6	21.33
110	20.5	13.1	27.00
120	13.5	8.6	41.00
130	15.5	9.9	50.00
140	7.0	4.5	NA
150	1.5	1.0	NA
160	0	0	--
170	0	0	--
180	0	0	--
190	0	0	--
200	0	0	--

Table 10. Back-calculated length at annuli of bluegill from Moose Creek Reservoir, June 1, 1992.

Age group	Number aged	----Backcalculated length (mm) at each annulus							Length at capture
		1	2	3	4	5	6	7	
I	0	0	0	0	0	0	0	0	0
II	10	45.9	78.1	0	0	0	0	0	91.3
III	20	48.3	90.3	126.0	0	0	0	0	134.9
IV	3	47.0	80.5	108.0	141.3	0	0	0	152.0
V	5	47.8	96.6	135.0	157.1	180.9	0	0	189.4
VI	0	0	0	0	0	0	0	0	0
VII	0	0	0	0	0	0	0	0	0
Average length		47.5	87.2	125.6	151.2	180.9	0	0	
# aged		38	38	28	8	5	0	0	

Table 11. Back-calculated length at annuli of pumpkinseed from Moose Creek Reservoir, June 1, 1992.

Age group	Number aged	----Backcalculated length (mm) at each annulus							Length at capture
		1	2	3	4	5	6	7	
I	0	0	0	0	0	0	0	0	0
II	0	0	0	0	0	0	0	0	0
III	3	45.3	71.5	94.6	0	0	0	0	103.7
IV	7	48.6	77.7	104.6	122.1	0	0	0	129.1
V	0	0	0	0	0	0	0	0	0
VI	0	0	0	0	0	0	0	0	0
VII	0	0	0	0	0	0	0	0	0
Average length		47.6	75.8	101.6	122.1	0	0	0	
# aged		10	10	10	7	0	0	0	

(Table 1). Other fish species that inhabit the reservoir are brook trout, largemouth bass, smallmouth bass M. dolomieu, redbside shiner Richardsonius balteatus, black bullhead, and sculpin Cottus sp.

It is believed that sculpin are the only native fish in Elk Creek Reservoir. Brook trout were introduced in the early 1900s. Bullheads were introduced in the 1930s, and bass were stocked in 1984 and 1985.

Five species of game fish combined to produce 79% of the catch biomass. Largemouth bass accounted for 26% of the total catch (Table 12). Rainbow trout represented 2% of the total catch. Smallmouth bass and brook trout each represented 5% of the total catch. Black bullhead accounted for 42% of the sample.

Redside shiners accounted for 21% of the total catch but less than 2% of the biomass. Neither bullheads or shiners are sought by anglers at this time. However, both are important forage items for bass. Increased predation on bullheads may decrease overall numbers and increase average size. This may increase angler desirability for bullheads.

Brook trout appear to be slow growing (Table 13) and in fairly poor condition (Table 14). However, they continue to be very popular with local anglers and are highly sought after. Historical records indicate a general decline in the quality of brook trout fishing in Elk Creek Reservoir following establishment of bullheads in the late 1930s (IDFG files). Reduction in bullhead numbers may reduce competition and improve brook trout production.

Growth rates of smallmouth bass in Elk Creek Reservoir are similar to other regional waters (Table 15). Relative weights of less than 90 on smallmouth bass smaller than 6.5 inches (170 mm) indicate competition. Once smallmouth bass are large enough to forage on fish, relative weight increase to 100 (Table 16).

Growth rates of largemouth bass in Elk Creek Reservoir are faster than average for area waters (Table 17). Relative weights of largemouth bass shown are similar to those of smallmouth bass. However, once largemouth bass change to fish as forage, relative weight is well in excess of 100 (Table 18).

Bass in Elk Creek Reservoir are managed under a quality regulation allowing harvest of two bass daily from July 1-December 31, none between 12 and 16 inches (305-406 mm). PSD of largemouth bass is 22. Approximately 20% of all bass sampled were in the protected slot.

Continued monitoring should be done to document any change in bullhead abundance and size distribution. Decreased abundance of bullheads may reduce intraspecific competition in Elk Creek Reservoir and improve Eastern brook trout growth rates and size structure.

TEXT

Table 12. Elk Creek Reservoir standard survey findings of fish community characteristics, June 3, 1992.

Catch per unit of combined gear sampling effort*					
Species	Length-range (mm)	No.	%	Weight (kg)	%
Game Fish					
Largemouth bass	50-383		26.0	12.90	25.0
Smallmouth bass	50-330		5.0	2.12	4.0
Eastern brook trout	138-345		5.0	2.43	5.0
Rainbow trout	190-289		2.0	1.50	3.0
Black bullhead	10-239		42.0	30.40	59.0
	Subtotal	233.0	37.0	18.95	37.0
Non-Game Fish					
Redside shiner	90-129	135.5	21.0	1.90	4.0
	Subtotal	135.5	21.0	1.90	4.0
All Species Total		635.5	100	51.25	100

*One hour electrofishing, one trap net night, and one combined floating and Sinking gill net night.

Table 13. Back-calculated length at annuli of brook trout from Elk Creek Reservoir, June 3, 1992.

Age group	Number aged	--- Backcalculated length (mm) at each annulus ---						Length at	
		1	2	3	4	5	6	7	capture
I	0	0	0	0	0	0	0	0	0
II	20	0	103.3	0	0	0	0	0	145.0
III	12	0	86.1	139.3	0	0	0	0	174.5
IV	2	0	89.9	145.2	197.4	0	0	0	231.7
V	0	0	0	0	0	0	0	0	0
VI	1	0	91.7	159.3	201.5	260.6	319.7	0	345.0
VII	0	0	0	0	0	0	0	0	0
Average length		0	88.5	142.0	197.7	260.6	319.0	0	
# aged		0	38	36	14	1	1	0	

Table 14. Catch composition of brook trout from Elk Creek Reservoir standard survey, June 3, 1992.

Length range (mm)	No. per unit effort	Percent of sample	Mean weight (grams)	Relative weight
100	0	0		
110	0	0		
120	0	0		
130	0	0	--	--
140	1.0	3.6	27.00	82
150	3.5	12.5	30.00	74
160	3.0	10.7	41.80	84
170	3.0	10.7	44.80	75
180	4.5	16.1	55.40	77
190	3.5	12.5	62.25	73
200	2.0	7.1	76.67	77
210	0	0	--	--
220	2.0	7.1	110.25	82
230	1.5	5.4	130.67	85
240	0.5	1.8	140.00	80
250	0.5	1.8	145.00	73
260	1.0	3.6	193.00	85
270	0.5	1.8	280.00	110
280	0	0	--	--
290	1.0	3.6	305.00	96
300	0	0	--	--
310	0	0	--	--
320	0	0	--	--
330.	0	0	--	--
340	0.5	1.8	440.0	84
350	0	0	--	--

Table 15. Back-calculated length at annuli of smallmouth bass from Elk Creek Reservoir, June 3, 1992.

Age group	aged	--- Backcalculated length (mm) at each annulus ---							Length at capture
		1	2	3	4	5	6	7	
I	0	0	0	0	0	0	0	0	0
II	15	79.1	119.5	0	0	0	0	0	126.9
III	8	100.2	174.0	251.3	0	0	0	0	262.8
IV	3	100.4	152.6	218.1	278.7	0	0	0	286.3
V	0	0	0	0	0	0	0	0	0
VI	0	0	0	0	0	0	0	0	0
VII	0	0	0	0	0	0	0	0	0
Average length		88.0	140.1	242.3	278.7	0	0	0	
# aged		26	26	11	3	0	0	0	

Table 16. Catch composition of smallmouth bass from Elk Creek Reservoir standard survey, June 3, 1992.

Length range (mm)	No. per unit effort	Percent of sample	Mean weight (grams)	Relative weight
50	1.5	5.2	NA	NA
60	1.0	3.4	NA	NA
70	1.0	3.4	NA	NA
80	0	0	--	--
90	0	0	--	--
100	2.5	8.6	12.00	77
110	4.5	15.5	20.33	99
120	7.5	25.9	21.40	81
130	2.0	6.9	28.00	84
140	2.0	6.9	32.00	77
150	1.0	3.4	58.00	113
160	0.5	1.7	80.00	129
170	0.5	1.7	62.00	84
180	0	0	--	--
190	0.5	1.7	132.00	128
200	0	0	--	--
210	0	0	--	--
220	0	0	--	--
230	0	0	--	--
240	0	0	--	--
250	0.5	1.7	235.00	100
260	0.5	1.7	247.00	94
270	2.0	6.9	294.50	100
280	1.0	3.4	340.00	103
290	0.5	1.7	340.00	93
300	0	0	--	--
310	0	0	--	--
320	0	0	--	--
330	0.5	1.7	500.00	93
340	0	0	--	--
350	0	0	--	--

Table 17. Back-calculated length at annuli of largemouth bass from Elk Creek Reservoir, June 3, 1992.

Age Number		Backcalculated length (mm) at each annulus							Length
group aged 1		2	3	4	5	6	7	capture	
I	0	0	0	0	0	0	0	0	0
II	2	78.0	133.2	0	0	0	0	0	139.5
III	3	96.8	170.6	234.6	0	0	0	0	256.1
IV	2	65.6	147.6	250.4	306.4	0	0	0	356.0
V	1	70.3	119.1	142.6	238.4	336.0	0	0	383.0
VI	0	0	0	0	0	0	0	0	0
VII	0	0	0	0	0	0	0	0	0
Average length		87.6	153.3	239.1	283.7	336.0	0	0	
# aged		67	67	39	3	1	0	0	

Table 18. **Catch composition of largemouth bass from Elk Creek Reservoir survey, June 3, 1992.**

Length range (mm)	No. per unit effort	Percent of sample	Mean weight (grams)	Relative weight
50	5.0	3.0	NA	NA
60	12.5	7.5	NA	NA
70	9.5	5.7	NA	NA
80	1.0	0.6	NA	NA
90	0	0	--	--
100	5.0	3.0	10.50	78
110	12.0	7.2	13.75	76
120	12.5	7.5	20.75	88
130	27.5	16.6	27.80	92
140	25.0	15.1	36.60	97
150	11.0	6.6	45.25	96
160	2.5	1.5	49.00	86
170	2.0	1.2	NA	NA
180	2.0	1.2	81.00	98
190	5.0	3.0	108.33	111
200	2.5	1.5	121.00	106
210	5.5	3.3	138.67	104
220	5.5	3.3	174.00	113
230	5.0	3.0	208.75	118
240	3.5	2.1	227.33	113
250	2.0	1.2	252.00	110
260	0.5	0.3	265.00	102
270	0	0	--	--
280	1.5	0.9	408.00	125
290	1.5	0.9	450.67	123
300	0.5	0.3	550.00	135
310	0.5	0.3	480.00	107
320	1.5	0.9	605.00	122
330	1.5	0.9	713.33	130
340	1.0	0.6	650.00	108
350	0	0	--	--
360	0.5	0.3	900.00	125
370	0	0	--	--
380	0.5	0.3	990.00	116
390	0	0	--	--
400	0	0		

Fingerling Evaluation and General Survey

Winchester Lake

We sampled Winchester Lake with two floating horizontal gill nets on April 13-14, 1992. We captured a total of 49 trout in 36 net hours of fishing (Table 19).

Spokane strain rainbow trout were the most abundant trout sampled, accounting for 57.7% of the total sample. Although they were not the largest of the fingerling groups, they still averaged 56 mm (2.2 inches) larger than catchable rainbow trout that had held over through the winter (Table 20). Spokane strain rainbow trout accounted for 78% of trout sampled in the creel at Winchester lake in April 1992.

The average total length of rainbow/cutthroat hybrids captured was 334 mm (13 inches). This was the largest total length achieved by any fingerling trout group evaluated in Winchester Lake. These fish were an average of 95 mm (3.7 inches) larger than holdover catchable rainbow trout. We believe these fish originated from the 1990 stocking year, not 1991. Therefore, their growth rate was the slowest of all fingerling groups (Table 21). Their longevity and ability to persist through two fishing seasons are desirable in creating a diversified trout fishery in Winchester Lake.

Spokane strain rainbow were also sampled by gill net on October 14, 1991. Average total length of fish in that sample was 237 mm. This represents an average length increase from stocking date (May 16, 1990) of 127 mm or 0.85 mm per day during that 150-day period. The following 184 days from October 15, 1991 to April 13, 1992 provided an average length increase of 58 mm or 0.32 mm/day.

The Kamloops trout growth rate is the highest observed among fingerling groups. However, the sample consisted of only one fish and is not a reliable estimate of average performance.

Spring Valley Reservoir

We sampled Spring Valley Reservoir with a floating gill net on April 15-16, 1992. We captured a total of 26 trout in 19 net hours of fishing (Table 22).

Domestic Kamloops rainbow trout were the most abundant trout sampled. This is likely attributed to good survival of this fingerling stocking group and a low angler harvest because of their small size (Table 23).

Average total length of Spokane strain rainbow trout captured was 263.5 mm (10.4 inches). This was the largest total length achieved by any fingerling trout group evaluated in Spring Valley Reservoir in 1992. This length represents an average growth rate of 0.48 mm per day since stocking (Table 24).

The average daily growth rate of Kamloops was 0.43 mm per day (Table 24). The growth rates of these two fingerling groups were very similar. The spring/fall stocking regime appears to be providing adequate size trout to supplement the catchable trout program in Spring Valley Reservoir.

TEXT

Table 19. Summary of gill net samples from Winchester Lake, April 14, 1992.
Two nets fished 18 hours, 36 total net hours.

	Total trout	Spokane AD	Kamloop LV	Hybrid RC	Catchable HRB
N	49	24	1	7	17
Ave. length (mm)	265	295	281	334	239
of sample	100	49.0	2.0	14.3	34.7
Catch/net hour	1.36	0.69	0.003	0.22	0.50
Catch/net hr/acre	0.0192	0.0094	0.0004	0.0030	0.0068

Table 20. Length frequency of trout collected by gillnetting Winchester Lake,
April 14, 1992.

Length (mm)	Catchable HRB	Spokane AD	Kamloop LV	Hybrid RC
150	0	0	0	0
160	0	0	0	0
170	4	0	0	0
180	0	0	0	0
190	1	0	0	0
200	1	0	0	0
210	2	0	0	0
220	0	0	0	0
230	1	0	0	0
240	0	0	0	0
250	0	0	0	0
260	2	0	0	0
270	1	1	0	0
280	0	1	0	0
290	0	5	1	0
300	2	11	0	0
310	1	2	0	2
320	0	4	0	0
330	0	0	0	1
340	1	0	0	1
350	0	0	0	0
360	0	0	0	3
370	0	0	0	0
380	0	0	0	0
390	1	0	0	0
400	0	0	0	0
Total	17	24	1	7
Ave. Length	239.18	295.25	281.00	333.70

Table 21. Comparison of growth rate (mm/day) between three groups of fingerling trout stocked in Winchester Lake.

Stocking group	Mark	Date stocked	Ave. size stocked (mm)	Days at Large	Size (mm) recovered	Growth L	Growth rate (mm/day)
Kamloops	LV	10/3/91	128	192	281	153	.80
Spokane	Ad	5/15/91	110	334	295	185	.55
rbt x ct	none	10/3/90	85	557	334	245	.44

Table 22. Summary of gill net samples from Spring Valley Reservoir, April 16, 1992. One net fished for 19 hours.

	Total trout	Spokane AD	Kamloop LV	Catchable HRB
N	26	8	13	5
Ave. length (mm)	238.6	263.5	211.9	268.2
of sample	100	30.8	50.0	19.2
Catch/net hour	1.37	0.42	0.68	0.26
Catch/net hr/acre	0.0253	0.0078	0.0127	0.0049

Table 23. Length frequency of trout collected by gillnetting Spring Valley Reservoir, April 16, 1992.

Length (mm)	Catchable HRB	Spokane AD	Kamloop LV
150	0	0	0
160	0	0	0
170	0	0	0
180	0	0	1
190	0	0	0
200	0	0	2
210	0	0	2
220	0	0	3
230	0	0	5
240	0	0	0
250	0	0	0
260	2	4	0
270	2	3	0
280	0	1	0
290	0	0	0
300	1	0	0
310	0	0	0
320	0	0	0
330	0	0	0
340	0	0	0
350	0	0	0
Total	5	8	13
Ave. Length	268.20	263.50	211.90

Table 24. Comparison of growth rate (mm/day) between two groups of fingerling trout stocked in Spring Valley Reservoir.

Stocking group	Mark	Date stocked	Avg. size stocked (mm)	Days at large	Size (mm) recovered	Growth L	Growth rate (mm/day)
Spokane	Ad	5/31/91	110	320	263.5	153.5	0.48
Kamloops	LV	10/3/91	128	194	211.9	83.9	0.43

Warmwater Fishery Status

Through the 1980s, Spring Valley Reservoir has maintained a largemouth bass population with a less than ideal size and age structure. In the 1970s, largemouth bass were probably foraging on fingerling rainbow trout as thousands were stocked annually. In the 1980s, the trout program shifted to the use of primarily catchable size rainbow trout, thus eliminating the only large forage item for largemouth bass in Spring Valley Reservoir. As a consequence, bass growth rates declined and few fish over 200 mm were present in the reservoir. As a response to small bass, no size limit was imposed on largemouth bass in Spring Valley Reservoir.

In 1989, bluegill were stocked in Spring Valley Reservoir to provide forage for largemouth bass.

In 1990 and 1991, tiger muskie Esox lucius x E. masquinongy were stocked in low numbers to prey on overabundant largemouth bass. Both bluegill and tiger muskie will also provide diversity to the fishery in Spring Valley Reservoir.

In 1992, we manually removed 238 largemouth bass less than 260 mm long from Spring Valley Reservoir. These fish were given to area residents to stock their small farm ponds. In 1992, we imposed a 12-inch minimum size limit on largemouth bass in Spring Valley Reservoir.

Largemouth Bass-We collected 264 largemouth bass in Spring Valley Reservoir on May 22, 1992 (Table 25). The length distribution shows great improvement since the early 1980s when less than 1% of largemouth bass sampled were greater than 300 mm long. We also showed a nearly ten-fold increase in the percent of population over 200 mm long (Table 25).

Bluegill-We measured 151 bluegill from collection efforts on Spring Valley Reservoir (Table 26). We also gave away 404 bluegill to local farm pond owners for stocking.

Tiger Muskie-We sampled one tiger muskie on May 22, 1992. The fish was 585 mm long (23 inches). Tiger muskie are under the statewide general regulation of 30-inch minimum length.

Soldiers Meadow Reservoir

We sampled Soldiers Meadow Reservoir with two floating gill nets on April 6-7, 1992. We captured a total of 68 salmonids in 36 net hours of fishing (Table 27).

Kokanee salmon were the most abundant salmonid sampled, making up 56% of the total catch. Age 2+ kokanee showed the largest average total length of any group of fingerlings stocked in Soldiers Meadow Reservoir (Table 28).

Average total length of Spokane strain rainbow trout captured was 180.8 mm (7.1 inches). This length represents an average growth rate of 0.23 mm per day since stocking (Table 29).

Table 25. Length frequency of largemouth bass from Spring Valley Reservoir, 1983 through 1992.

Length (mm)	9/22/83	9/26/84	1988	6/18/91	5/22/92
50	2	0	3	0	9
60	2	0	0	0	8
70	1	0	0	0	8
80	1	0	2	1	5
90	8	0	8	0	1
100	28	0	23	0	0
110	40	5	31	2	0
120	54	4	19	1	2
130	37	4	18	1	6
140	21	18	9	9	11
150	13	29	2	27	15
160	6	33	2	39	9
170	2	14	5	30	19
180	0	12	6	19	15
190	1	9	6	12	3
200	4	4	5	20	6
210	4	0	4	75	11
220	0	0	2	110	19
230	0	0	0	55	29
240	2	1	0	10	26
250	1	0	1	9	22
260	1	0	0	4	14
270	2	0	0	0	9
280	1	0	0	0	3
290	0	0	0	0	2
300	0	0	0	0	3
310	0	1	0	0	0
320	0	0	0	0	2
330	0	0	0	0	0
340	0	0	0	0	3
350	0	0	0	0	0
360	0	0	0	0	2
370	0	0	0	0	0
380	0	0	0	0	0
390	0	0	0	1	0
400	0	0	0	0	0
410	0	0	0	0	0
420	0	0	0	0	0
430	0	0	0	0	0
440	0	0	0	0	0
450	0	0	0	0	0
460	0	0	0	1	1
470	0	0	0	1	0
480	0	0	0	0	1
490	0	0	0	0	0
500	1	0	0	0	0
N =	232	134	146	427	264
Ave. Length	128.92	158.96	129.01	202.60	199.02
PSD	6	17	0	1	8
a200 mm	6.9	4.5	8.2	67.0	58.0
% a300 mm	0.4	0.8	0	0.7	4.5

Table 26. Length frequency of bluegill from Spring Valley Reservoir, May 22, 1992.

Length (mm)	5/22/92
50	0
60	1
70	2
80	11
90	12
100	14
110	23
120	28
130	32
140	21
150	5
160	2
170	0
180	0
190	0
200	0
N =	151
Ave. length	117 mm

Table 27. Length frequency of salmonids collected by gillnetting Soldiers Meadow Reservoir, April 7, 1992.

Length (mm)	Rainbow WRB	Spokane AD	Kokanee KE 1+	Kokanee KE 2+
150	0	0	0	0
160	0	0	0	0
170	0	3	4	0
180	2	13	4	0
190	1	3	3	0
200	0	2	0	0
210	1	0	0	0
220	1	2	0	1
230	0	0	0	7
240	0	0	0	17
250	0	0	0	2
260	0	0	0	0
270	0	0	0	0
280	0	0	0	0
290	0	0	0	0
300	0	0	0	0
310	0	0	0	0
320	1	0	0	0
330	0	0	0	0
340	1	0	0	0
350	0	0	0	0
N =	7	23	11	27
Ave. Length	226.80	180.80	175.73	232.01

Table 28. Summary of gill net samples from Soldiers Meadow Reservoir, April 6, 1992. Two nets fished 36 total net hours.

	Total salmonids	Spokane (Ad)	Kokanee KE (1+)	Kokanee KE (2+)	Rainbow (WRB)
N	68	23	11	27	7
Ave. length (mm)	205.0	180.8	175.7	232.0	226.8
of sample	100	34	16	40	10
Catch/net hour	1.89	0.64	0.31	0.75	0.19
Catch/net hr/acre	0.0193	0.0065	0.0031	0.0077	0.0020

Table 29. Comparison of growth rate (mm/day) between three groups of fingerling salmonids stocked in Soldiers Meadow Reservoir.

Sampled group	Mark	Date stocked	Ave. size stocked (mm)	Days large	Size (mm) recovered	Growth L	Growth rate (mm/day)
Spokane	Ad	5/31/91	110	310	180.8	70.8	0.23
Kokanee 1+	None	5/8/91	88	333	175.7	87.9	0.26
Kokanee 2+	None	5/1/90	89	705	232.0	143	0.20

Average daily growth rates of all fingerling groups stocked in Soldiers Meadow Reservoir are similar. Age 2+ kokanee will provide harvestable size fish throughout the 1992 fishing season until they spawn in September. Spokane rainbow trout are too small to satisfy the anglers at Soldiers Meadow Reservoir. It is unlikely that they will achieve suitable size prior to the peak of angler activity in May and June.

RECOMMENDATIONS

1. Implement dredging proposal (Appendix B) on Moose Creek Reservoir.
2. Continue fingerling stocking program in Region 2 lowland lakes.
3. Perform standard survey on Spring Valley Reservoir in 1993.
4. Perform random stratified creel census on lowland lakes in 1993.

TEXT

LITERATURE CITED

Apperson, K.A. 1987. The influence of diet on growth of largemouth bass *Micropterus salmoides* in northern Idaho: a comparative study. Masters thesis. University of Idaho, Moscow, Idaho.

A P P E N D I C E S

Appendix A. Fish community survey procedures and guidelines.

LOWLAND LAKES AND RESERVOIRS STANDARD FISH COMMUNITY SURVEY PROCEDURES, CORE DATA, AND REPORT GUIDELINES

I. Surveys will be conducted using the following standardized gear:

A. Gill Nets

Floating and sinking monofilament nets, 150'x 6', with six panels composed of 1/2, 3/4", 1", 1-1/2", 2", and 2-1/2" bar mesh. One floating and one sinking net combined fished overnight equals one unit of gill net effort.

B. Trap Nets

75' lead, 3'x 6' frame, crowfoot throats on first and third of five hoops, 3/4" bar mesh, treated black. One trap net fished overnight equals one unit of trap net effort.

C. Electrofishing

A pulsed DC electrofishing boat with boom-mounted electrodes. One hour of current-on electrofishing equals one unit of electrofishing effort.

II. Surveys will be conducted using the following procedures.

A. Effort

Due to the selectivity of individual gear types, a combination of gill netting, trap netting, and electrofishing effort will be used to characterize the fish community. One unit of effort for each of the gear types combined, equals one unit of "sampling effort". The following table provides guidelines for the minimum amount of sampling effort and survey time needed for various size waters:

Lake size (ac) *Units of sampling effort Nights needed

1 - 25	1	1
26 - 100	2	1
101 - 500	4	1-2
501 - 1,000	6	2
**1,000+	6+	2-3+

*one unit of "sampling effort" includes a pair of floating and sinking gill nets and one trap net fished overnight and one hour of electrofishing.

**use best judgement on sampling effort needed to sample various habitat zones.

TEXT

Appendix B. Proposal for dredging Moose Creek Reservoir

PROPOSED DREDGING OF MOOSE CREEK RESERVOIR

Clint Rand
Senior Conservation Officer
Idaho Department of Fish and Game

Moose Creek Reservoir is located in Latah County northeast of Bovill, Idaho. It is approximately 27 acres in size with 90% of the area less than 8 feet deep. As a result of the shallow depth, the open water area during most of the fishing season is limited to the 10% of the water that is too deep for bottom-rooted vegetation to reach the surface.

The fishery at Moose Creek Reservoir is currently managed for put-and-take rainbow trout and warmwater fish such as pumpkinseed, sunfish, crappie, and largemouth bass. The crappie are less numerous than the others and are found mostly in the open water areas. Sunfish are the most abundant species and provide the forage base for the largemouth bass which are the main predators. The bass fishery provides an opportunity for trophy-size fish with a 20-inch minimum size limit.

A long-standing complaint from fishermen at Moose Creek Reservoir has been the aquatic vegetation. Trout fishermen find it particularly difficult to fish from shore and to use many of the baits and lures that are effective for trout. Bass fishermen are less affected by the weeds but are only able to use certain techniques.

Pumpkinseed, sunfish, and crappie are the primary prey fish at Moose Creek Reservoir. Crappie numbers have remained at a low level and are likely being suppressed by predation from the bass in open water areas. Sunfish are very abundant in the weed beds. The thickness and amount of cover available to them provides ample escape and as a result, overpopulation and stunting occurs.

Dredging lanes through the vegetation beds could be beneficial to both the fish and the fishermen. These open areas would make it possible for increased predation on sunfish by the bass. Although the bass would be more vulnerable to fishermen, the size limit would protect most fish. Any reduction in the pressure on the crappie would help them build up in numbers. Increased predation on sunfish could help to increase the average size and provide better fishing. The fishermen would have greatly improved fishing access to trout, bass, sunfish, and crappie.

On March 11, 1992, graph recordings were made at Moose Creek Reservoir to determine the depths in a number of locations most often used by fishermen. These cross-sectional graphs were then used to determine the amount of material that needed to be removed to provide weed-free lanes from the shore to deep water. With the exception of the area at the boat ramp, which was calculated for a 40' wide lane, all of the lanes were calculated for 20' wide to a depth of 10' measured on the high water level. Seven sites were chosen as the most frequently used bank locations. Each site was prioritized for relative value to the fishermen weighted against the amount of material needing to be removed. For a complete breakdown of the material to be removed, see Table 1.

TEXT

Appendix B. Continued.

Table 1. Sites and priorities for proposed dredging at Moose Creek Reservoir.

Site #	Priority #	Material (yards)	Size of area
1	1st	1,000	40 'x175' to a depth of 10'
2	6th	520	20 'x200 '
2a	3rd	300	20 'x70 '
3	5th	320	20 'x125 '
3a	7th	775	20 'x300 '
4	2nd	200	20 'x80 '
5	4th	200	20 'x75 '

TEXT

JOB PERFORMANCE REPORT

State of: Idaho

Name: Regional Fisheries
Management Investigations

Project: F-71-R-17

Job: 2-c

Title: Region 2 Rivers and Streams
Investigations

Period Covered: July 1, 1992 to June 30, 1993

ABSTRACT

Region 2 personnel snorkeled 76 transects in 25 streams within the Clearwater, Snake, and Salmon River drainages. Juvenile steelhead Oncorhynchus mykiss, and cutthroat trout O. clarki numbers were the lowest observed since the 1970s on the Selway River.

We checked 181 anglers who fished 361.7 hours to catch 354 game fish from Region 2 rivers and streams.

From reward tag returns we estimated angler exploitation of smallmouth bass Micropterus dolomieu in the Snake River between rkm 280 and 343 at 12.30.

We captured and tagged 37 white sturgeon Acipenser transmontanus in the Snake River below Hells Canyon Dam. Tagged sturgeon ranged from 71 cm to 259 cm total length.

We collected 246 smallmouth bass and 27 rainbow trout from the Salmon River. We tagged 17 bass, 305 mm and larger, with reward tags. Stomach analysis of 14 hatchery origin trout show no fish in their diet.

Authors:

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TEXT

OBJECTIVES

1. Develop a long-term fish population database on selected streams throughout Region 2.
2. Estimate angler exploitation on smallmouth bass Micropterus dolomieu in the Snake River between the Washington/Oregon border and Pittsburg Landing.
3. PIT (passive integrated transponder) tag white sturgeon Acipenser transmontanus in the Snake River below Hells Canyon Dam and the Salmon River below Riggins.
4. Assess diet of hatchery rainbow trout Oncorhynchus mykiss and residualized hatchery steelhead smolts in the Snake, Salmon, and Clearwater River drainages.

SALMONID POPULATION TREND MONITORING

Methods

We used standard snorkeling techniques to monitor fish densities in regional rivers and streams. Snorkeling was done in late summer when streams were low, clear, and accessible.

Small streams were snorkeled upstream with one or two observers depending on stream width. Larger streams and river corridors were snorkeled free-floating downstream with four to **six** observers depending on corridor width.

We also sampled fish populations with traditional hook and line methods. Artificial lures with barbless hooks were used to aid in fish release.

Results

Selway River Investigations

Numbers of cutthroat trout O. clarki counted in snorkel transects in the mainstem Selway River decreased in most sections during 1992 (Table 1). Juvenile steelhead trout (Table 2) and mountain whitefish Prosopium williamsoni (Table 3) numbers also declined from 1990.

Personnel caught, measured, and released 301 cutthroat trout in the mainstem Selway River from White Cap Creek to Race Creek (Table 4). These fish ranged from 120 mm to 390 mm, averaging 251.5 mm total length. Approximately 18% of the cutthroat were over 305 mm total length. This was the lowest percentage since 1975 (Table 5).

The percent of cutthroat over 305 mm observed in mainstem transects snorkeled by one observer are shown in Table 6.

We established four new corridor (five snorkeler) transects on the mainstem Selway River. The purpose of these transects is to test the variability in the one-snorkeler reference pools. Results of these first-year monitoring counts are shown in Table 7.

TEXT

Table 1. Average number of cutthroat trout counted/snorkel transect (1 snorkeler) in the Selway River (unroaded portion) from White Cap Creek to Race Creek, 1973-1992 (ND = no data).

Stream section	1973	1974	1975	1976	1977	1978	1980	1982	1984	1986	1988	1990	1992
White Cap Cr. to Running Cr.	4.2	3.4	6.8	7.2	10.8	7.4	13.2	11.2	11.0	15.2	13.3	6.8	4.8
Running Cr. to Bear Cr.	7.2	4.8	6.6	6.2	18.6	10.6	18.6	11.2	17.4	19.2	11.6	16.4	9.4
Bear Cr. to Moose Cr.	5.3	7.5	5.0	6.0	17.4	19.6	16.0	16.2	19.4	21.4	21.8	7.4	6.2
<u>Weighted means:</u>													
White Cap Cr. to Moose Cr.	5.6	5.2	6.1	6.5	15.4	12.5	16.2	12.8	16.3	18.8	15.7	10.4	6.9
Moose Cr. to Halfway Cr.	6.0	9.0	5.6	8.0	24.0	19.7	14.3	19.5	28.3	21.7	18.5	10.5	3.7
Halfway Cr. to Three Links Cr.	3.0	7.4	7.0	9.5	20.0	22.0	29.0	21.0	23.0	32.5	30.0	3.0	5.0
Three Links Cr. to Jim's Cr.	5.0	4.3	8.0	6.5	11.0	16.0	22.0	23.5	18.5	34.7	20.0	12.3	3.0
Jim's Cr. to Race Cr.	ND	2.5	1.2	5.7	7.5	3.5	12.3	18.0	14.0	14.5	14.8	11.0	3.0
<u>Weighted means:</u>													
Moose Cr. to Race Cr.	3.6	5.9	5.3	7.4	15.3	13.8	18.0	21.1	20.5	24.3	18.7	9.9	3.7

Table 2. Average number of juvenile steelhead counted/snorkel transect (1 snorkeler) in the Selway River (unroaded portion) from White Cap Creek to Race Creek, 1973-1992.

Stream section	1973	1974	1975	1976	1977	1978	1980	1982	1984	1986	1988	1990	1992
White Cap Cr. to Running Cr.	1.2	1.1	5.0	4.0	0.8	3.6	5.0	7.4	10.5	5.5	3.8	4.0	3.7
Running Cr. to Bear Cr.	3.2	7.0	2.2	2.0	0.8	3.4	6.0	14.4	3.8	4.4	4.0	2.2	2.4
Bear Cr. to Moose Cr.	4.3	3.7	11.0	13.0	3.3	3.4	9.0	19.8	17.2	11.8	18.2	15.6	7.6
<u>Weighted means:</u>													
White Cap Cr. to Moose Cr.	2.7	2.6	7.7	5.7	1.9	2.6	5.9	11.1	14.3	7.1	9.1	8.4	4.7
Moose Cr. to Halfway Cr.	27.5	17.8	17.8	13.2	5.3	22.0	9.7	40.3	43.8	23.7	22.5	34.3	1.7
Halfway Cr. to Three Links Cr.	14.0	17.4	25.3	19.5	9.5	12.0	19.0	28.0	31.0	21.0	35.0	42.0	9.3
Three Links Cr. to Jim's Cr.	19.3	8.8	32.5	23.5	24.7	18.7	18.9	24.2	26.7	28.7	31.8	41.0	2.3
Jim's Cr. to Race Cr.	6.2	6.7	4.3	10.5	5.8	9.8	10.0	13.0	15.0	12.3	3.3	1.8	0.7
<u>Weighted means:</u>													
Moose Cr. to Race Cr.	12.8	19.2	13.8	12.0	14.9	13.5	29.6	28.1	21.6	23.2	22.5	15.8	3.5

Table 3. Average number of whitefish counted/snorkel transect in the Selway River (unroaded portion) from White Cap Creek to Race Creek, 1973-1992.

Stream section	1973	1974	1975	1976	1977	1978	1980	1982	1984	1986	1988	1990	1992
White Cap Cr. to Running Cr.	35.2	31.1	8.4	17.8	32.8	9.4	15.8	18.8	23.2	22.2	17.3	22.8	15.0
Running Cr. to Bear Cr.	39.2	36.4	15.0	6.5	77.8	17.4	17.6	21.2	37.4	30.6	24.2	36.8	45.4
Bear Cr. to Moose Cr.	31.1	34.2	11.8	9.0	51.3	16.6	19.0	30.2	44.2	31.6	29.6	10.2	13.8
<u>Weighted means:</u>													
White Cap Cr. to Moose Cr.	34.9	33.9	11.7	10.9	44.9	12.1	17.6	23.4	35.8	28.6	24.1	21.7	25.4
Moose Cr. to Halfway Cr.	48.8	31.5	32.4	16.6	69.5	40.3	32.0	43.8	46.2	41.0	44.7	47.3	12.0
Halfway Cr. to Three Links Cr.	17.7	31.4	27.0	16.0	65.0	67.0	27.0	47.0	60.0	38.5	70.0	12.0	10.0
Three Links Cr. to Jim's Cr.	23.8	19.0	41.0	19.5	49.7	46.0	38.3	59.0	50.0	50.7	35.0	27.3	9.0
Jim's Cr. to Race Cr.	5.2	16.8	18.7	2.0	41.0	20.5	20.0	21.0	32.5	19.7	22.3	8.8	9.0
<u>Weighted means:</u>													
Moose Cr. to Race Cr.	23.0	21.5	29.3	13.3	50.4	39.6	28.8	47.9	44.2	35.9	36.8	26.5	13.1

Table 4. Percent of cutthroat trout by 50.8 mm (2 inch) size groups sampled in the Selway River by angling, 1975-1992.

Length (mm)	1975	1976	1977	1978	1980	1982	1984	1986	1988	1990	1992
102 to 151	8.7	2.2	8.7	0.8	4.6	2.8	4.2	2.4	12.4	0.1	4.3
152 to 202	31.3	16.4	20.9	20.7	13.6	19.0	22.2	15.8	14.0	22.7	23.3
203 to 253	27.0	24.8	24.5	15.7	22.2	25.2	28.2	23.3	25.1	16.5	23.6
254 to 304	21.0	35.7	27.0	34.1	30.7	31.2	24.7	27.1	24.3	26.2	30.6
305 to 355	11.2	18.4	17.0	23.2	25.3	18.9	16.8	28.0	21.0	25.7	15.7
356 to 405	0.8	2.5	1.3	5.1	3.4	2.3	3.8	3.1	3.0	4.7	2.7
Over 405	0	0	0.6	0.4	0.2	0.6	0	0.3	0.2	0.5	0
Number of cutthroat measured	233	238	229	470	352	549	429	322	506	816	301

Table 5. Comparison of cutthroat trout counted in snorkel transects (1 snorkeler) and cutthroat trout by angling in the Selway River between White Cap Creek and Race Creek, 1975-1992.

Year	Counted in snorkel transects		Total CT measured	Caught by angling	
	Average # of CT counted/ transect	% of CT >305 mm in transects		Average CT total length (mm)	% of CT caught >305 mm
1992	5.4	28	301	251.5	18
1990	10.5	19	816	259.1	31
1988	17.1	22	506	248.9	24
1986	21.5	20	322	264.2	32
1984	18.3	23	429	248.9	21
1982	16.1	16	549	254.0	22
1980	17.0	14	352	264.2	29
1978	13.0	19	470	261.6	27
1977 ^a	15.4	20	229	241.3	19
1976	7.1	21	238	259.1	22
1975	5.7	13	233	238.8	12
1974	5.5	10			
1973 ^a	4.4	18			

^aExtremely low flows

Table 6. Percent of cutthroat trout over 305 mm (12 inches) counted in snorkel transects (1 snorkeler) in the Selway River (unroaded portion) from White Cap Creek to Race Creek, 1973-1992 (ND = no data).

Stream section	1973	1974	1975	1976	1977	1978	1980	1982	1984	1986	1988	1990	1992
White Cap Cr. to Running Cr.	9.5	16.7	11.8	22.2	22.6	16.2	13.2	8.9	15.9	21.3	24.5	29.6	6.7
Running Cr. to Bear Cr.	11.1	8.3	18.2	16.2	21.5	20.8	11.8	10.7	20.7	14.6	22.4	15.9	25.5
Bear Cr. to Moose Cr.	34.4	15.5	8.0	25.0	25.0	21.4	9.9	15.0	22.7	18.7	22.9	16.2	48.4
<u>Weighted means:</u>													
White Cap Cr. to Moose Cr.	18.9	12.7	13.0	20.6	21.8	22.3	11.5	12.0	20.6	17.8	23.2	15.6	32.9
Moose Cr. to Halfway Cr.	8.3	ND	3.6	17.5	12.5	13.6	18.6	17.9	22.1	22.7	21.6	9.5	9.1
Halfway Cr. to Three Links Cr.	19.0	16.2	19.0	26.3	17.5	15.9	17.2	23.8	26.1	22.7	26.7	33.0	6.7
Three Links Cr. to Jim's Cr.	23.3	5.8	12.5	38.5	27.5	25.0	27.3	22.3	28.4	24.0	23.7	16.3	11.1
Jim's Cr. to Race Cr.	ND	10.0	50.0	11.8	26.5	35.7	4.1	11.1	30.4	15.5	13.6	46.7	50.0
<u>Weighted means:</u>													
Moose Cr. to Race Cr.	17.3	8.0	13.0	21.3	18.9	19.4	17.6	19.9	29.7	21.9	21.0	19.6	18.2

Table 7. Number of fish counted in snorkel transects (5 snorkelers) in the unroaded mainstem Selway River, 1992.

Location	Cutthroat trout		-----Steelhead trout -----				Chinook	Whitefish
	305 mm	305 mm	Age 0	Age 1	Age 2	>2		
at Bad Luck Creek	30	14	0	0	0	0	0	106
at North Star Creek	22	2	0	0	0	0	0	56
at Osprey Island	8	8	0	2	0	0	0	38
at Tango Creek	15	26	0	16	9	0	14	50

As in previous years, juvenile chinook salmon *O. tshawytscha* numbers remained low in the mainstem Selway River. Only one individual was counted in the established mainstem transects as compared to 14 in 1990. No adult chinook salmon were observed. A total of 43 chinook salmon juveniles were observed in seven Selway River tributaries (Table 8).

General

Fish densities (per 100 m²) as determined by snorkeling 10 transects in the Lochsa River drainage are shown in Table 9.

Fish densities as determined by snorkeling 23 transects in four river drainages in Region 2 are shown in Table 10.

CREEL SURVEY

Methods

Region 2 fish management personnel and conservation officers performed spot check creel surveys throughout the region in 1992. Fish were separated by species or differentiated by marks on the creel form. Fish species or mark groups were also recorded by 2 cm size groups.

Results

We checked 181 anglers who fished 361.7 hours on rivers and streams in Region 2. Anglers reportedly caught 354 game fish, an average of .98 fish per hour (Table 11).

SNAKE RIVER

Smallmouth Bass

Methods

We sampled smallmouth bass in the Snake River using pulsed DC current from a portable generator and a Coffelt VVP-2E pulsator. Booms and electrodes were mounted on a 5.5-m aluminum boat. Sampling took place during daylight hours to avoid safety hazards.

We tagged bass 200 mm and larger with \$5 reward Floy anchor tags. Returned tags were used to estimate angler exploitation. Bass were collected and tagged between the Washington/Oregon state line (rkm 280) and Pittsburg Landing (rkm 343) to fill in missing information from the previous field season (Schriever in press).

TEXT

Table 8. Summary of fish densities (per 100 m²) as determined by snorkeling the Seaway River drainage, 1992.

Stream	Date	----- Steelhead trout -----					----- Cutthroat trout -----		----- Chinook -----		Whitefish	Bull trout
		total	age 0	age 1	age 2	age > 2	total	305 mm	305 mm	salmon		
Otter Creek	7/29	18.74	9.08	5.68	2.28	1.70	1.14	0.57	0.57	0	0	0
E.F. Moose Creek at Fitting	7/26	5.19	0.14	3.75	1.15	0.14	1.73	1.37	0.36	0.79	1.00	0
Moose Creek at mouth	7/27	1.32	0	0.92	0.23	0.18	0.92	0.83	0.09	0.41	27.00	0
Marten Creek	7/28	22.13	7.83	11.92	1.70	0.68	1.70	0.68	1.02	0	1.00	0
Selway R. at Hell's Half	7/22	2.16	0.52	1.42	0.22	0	0.37	0.37	0	0.90	8.00	0
N.F. Moose Creek, upper	7/26	3.65	1.34	1.48	0.76	0.07	1.37	1.09	0.29	0.22	80.00	0.07
N.F. Moose Creek, lower	7/26	1.51	0.67	0.44	0.36	0.04	0.36	0.13	0.24	0.44	10.00	0
Moose Creek at confluence	7/26	1.08	0.82	0.21	0.02	0.04	0.51	0.51	0	0.25	10.00	0
Three Links Creek, lower	7/28	8.44	0.56	5.07	2.63	0.19	0.94	0.94	0	0	10.00	0
Three Links Creek, upper	7/28	9.50	4.90	3.70	0.92	0	2.75	2.75	0	0	0	0
Otter Creek, lower	7/29	10.56	7.30	2.40	0.81	0	0	0	0	0	0	0
Bear Creek at bridge	7/25	0.62	0.09	0.44	0.09	0	0.62	0.62	0	0	0.18	0.09
Bear Creek, upper	7/25	0.49	0.10	0.10	0.29	0	0.88	0.69	0.10	0.39	16.00	0

Table 9. Summary of fish densities (per 100 m²) as determined by snorkeling the Lochsa River drainage, 1992.

Stream	Date	-----Steelhead trout-----					-----Cutthroat trout-----		-----Chinook-----		Whitefish	Bull trout
		total	age 0	age 1	age 2	age >2	total	305 mm	305 mm	salmon		
Fish Creek, lower	8/12	19.00	9.40	9.20	0.38	0	0	0	0	0.32	0	0
Fish Creek, upper	8/6	34.6	16.3	15.2	3.10	0	0.15	0	0.15	0.78	0	0
Warm Springs Creek	8/12	3.61	1.00	1.74	0.87	0	1.99	1.24	0.75	0	0	1.00
Post Office Creek, upper	8/12	8.37	1.44	6.35	0.57	0	51.96	51.96	0	0	0	0
Post Office Creek, lower	8/12	7.29	0.81	4.86	1.62	0	22.69	22.69	0	0	0	0
Lochsa R. at Papoose Cr.	8/13	0.13	0.13	0	0	0	0.47	0.05	0.42	0.03	0	0
Lochsa R. at Warm Springs Cr.	8/13	0.13	0.05	0.07	0.02	0	0.57	0.51	0.06	0.05	0	0
Lochsa R. at Fish Creek	8/13	0.21	0.09	0.09	0.02	0	0.06	0.03	0.03	0	0	0
Lochsa R. at Pete King Cr.	8/13	0	0	0	0	0	0	0	0	0	27.00	0
Old Man Creek	8/6	81.8	19.1	56.4	0	0	1.58	0.79	0.79	0	0	0

Table 10. Summary of fish densities (per 100 m²) as determined by snorkeling miscellaneous streams in Region 2, 1992.

Drainage/stream	Date	total	Steelhead trout				total	Cutthroat trout		Chinoo salmon	Whitefish	Bull trout
			age 0	age 1	age 2	age >2		305 mm	305 mm			
<u>S.F., Clearwater</u>												
John's Creek, lower #1	6/25	7.78	0	6.32	1.45	0	0	0	0	0	4	0
John's Creek, lower #2	6/25	10.56	0	7.92	1.98	0.67	0.33	0.33	0	0	5	0
Ten Mile Creek, upper	6/25	3.83	0	3.44	0.38	0	0	0	0	0	0	0
Ten Mile Creek, lower	6/25	13.19	0	5.82	6.21	1.16	0	0	0	0	0	0
Moore Creek, upper	8/3	0	0	0	0	0	16.10	16.10	0	0	0	0
Moore Creek, lower	8/3	0.79	0	0.79	0	0	4.70	4.70	0	0	0	0
<u>Clearwater River</u>												
Potlatch River, upper	7/8	1.41	1.41	0	0	0	0	0	0	0	0	0
Potlatch River, lower	7/8	0.09	0.09	0	0	0	0	0	0	0	0	0
E.F. Potlatch River	8/4	0.04	0.01	0.01	0.01	0.01	0	0	0	0	0	0
<u>Salmon River</u>												
White Bird Creek	7/14	5.17	1.35	4.27	1.79	0	0	0	0	0	0	0
S.F. White Bird Creek, lower	7/14	5.42	1.02	4.40	0	0	0	0	0	0	0	0
Race Creek	7/15	30.46	18.91	8.40	2.80	0.04	0	0	0	0	0	0
John Day Creek, upper	7/15	4.12	1.17	1.77	0.59	0	0	0	0	0	0	0
John Day Creek, lower	7/15	5.81	4.06	1.75	0	0	0	0	0	0	0	0
Skookumchuck Creek, upper	7/14	6.47	5.03	1.07	0.35	0	0	0	0	0	0	0
Skookumchuck Creek, lower	7/14	18.94	10.87	7.45	0.63	0	0	0	0	0	0	0
<u>Snake River</u>												
Granite Creek, upper	8/11	21.3	4.92	9.29	6.56	0.55	0	0	0	0	0	0
Granite Creek, lower	8/11	13.3	5.17	4.68	1.97	1.48	0	0	0	0	0	0
Deep Creek, upper	8/12	42.1	22.63	13.68	4.74	1.05	0	0	0	0	0	0
Deep Creek, lower	8/12	33.6	13.7	14.5	4.15	4.15	0.42	0.42	0	0	0	0

Table 11. Summary of impromptu creel surveys in Region 2 rivers, 1992.

Date	Total Anglers	hours	CT	RBT	K1	SHS	BKT	BULL	KOK	MWF	SMB	CAT	STR	Total	CPUE
Clearwater River															
7/2	4	6.0	0	4	0	0	0	0	0	0	1	0	0	5	0.83
7/22	5	13.5	0	2	1	7	0	0	0	0	0	0	0	10	0.74
	9	19.5	0	6	1	7	0	0	0	0	1	0	0	15	0.774
Clearwater River, Middle Fork															
5/23	4	1.6	1	0	0	0	0	0	0	0	0	0	0	1	0.63
5/24	2	0.5													
	6	2.1	1	0	0	0	0	0	0	0	0	0	0	1	0.48
Clearwater River, North Fork															
3/28	8	14.1	0	0	0	0	0	0	0	62	0	0	0	62	4.40
5/23	27	28.0	12	1	0	0	0	0	0	0	0	0	0	13	0.46
	35	42.1	12	1	0	0	0	0	0	62	0	0	0	75	1.78
Kelly Creek (catch and release)															
6/18	1	7	23	1	0	0	0	0	0	0	0	0	0	24	3.43
6/19	1	7	31	7	0	0	0	0	0	0	0	0	0	38	5.43
6/20	1	6	23	0	0	0	0	0	0	0	0	0	0	23	3.83
	3	20	77	8	0	0	0	0	0	0	0	0	0	85	4.25
Clearwater River, South Fork															
5/23	28	36	1	3	0	31	0	0	0	0	0	0	0	35	0.97
5/24	39	86	1	7	0	27	0	0	0	1	0	0	0	36	0.42
	67	122	2	10	0	58	0	0	0	1	0	0	0	71	0.58

Table 11. Continued.

Date	Anglers	Total hours	CT	RBT	K 1	SHS	BKT	BULL	KOK	MWF	SMB	CAT	STR	Total	CPUE
Newsome Creek															
5/23	15	41	0	12	0	0	0	0	0	1	0	0	0	13	0.32
Eldorado Creek															
7/8	2	3	0	6	0	0	0	0	0	0	0	0	0	6	2.00
Lake Creek															
7/12	2	4	2		0	0	0	1	0	0	0	0	0	3	0.75
Snake River															
5/2	21	54	0	0	0	27	0	1	0	0	38	0	0	66	1.22
5/3	21	54	0	0	0	0	0	0	0	0	19	0	0	19	0.35
42		108	0	0	0	27	0	1	0	0	57	0	0	85	0.79
181		361.7	94	43	1	92	0	2	0	64	58	0	0	354	0.98

CTT = cutthroat trout
 SHS = steelhead smolt
 KOK = kokanee
 CAT = catfish

RBT = rainbow trout
 BKT = Eastern brook trout
 MWF = whitefish
 STR = sturgeon

K1 = domestic Kamloops rainbow trout
 BULL = bull trout
 SMB = smallmouth bass

Results

We collected 154 smallmouth bass with electrofishing gear at four locations in the Snake River between rkm 280 and rkm 343 (Table 12). We tagged 81 bass 200 mm and larger (Table 13). Fish were collected and marked in late April and early May.

Angler exploitation was estimated at 12.3%. This value fits between the 1991 estimate of 21% below rkm 280 and 9% above rkm 343.

PSD for the 154 fish sample was 44. This **is** also mid-range between the 1991 estimate of 36 below rkm 280 and 51 above rkm 343.

Drawdown Monitoring

Methods

We duplicated 1991 electrofishing efforts in an area temporarily dewatered during the 1992 drawdown test in Lower Granite Reservoir. We used the same boat, the same number of netters (2), and fished 1 hour and 15 minutes both years. The sampling area was on the Idaho shore of the slackwater reach of the Snake River between the U.S. Highway 12 bridge and the Lewiston Grain Growers elevators.

Results

We collected 134 smallmouth bass in 1992 and 90 bass in 1991. PSD also improved in 1992 (Table 14).

Sturgeon

Methods

We sampled white sturgeon with traditional hook and line methods. Fish were measured for fork and total length. Spaghetti tags were inserted at the posterior base of the dorsal fin and tied in a loose loop. Passive integrated transponder (PIT) tags were inserted in the left side of the fish, just below the base of the dorsal fin. Fish were inspected for previous marks, tags, and hook scars.

Results

Region 2 fisheries management personnel captured and tagged 37 white sturgeon on the Snake River below Hells Canyon Dam during the 1991-1992 field season (Table 15). Length of tagged sturgeon ranged from 71 to 259 cm with an average length of 161.3 cm. The size category breakdown of tagged sturgeon **is** shown in Table 16.

We recaptured tag #1642 on May 9, 40 days after it was tagged, in the same location where it was tagged. We recaptured tag #1660 on July 13, 14 days after it was tagged, also in the same location where it was tagged.

Table 12. Length frequency of smallmouth bass collected by electrofishing in the Snake River between rkm 280 and rkm 343.

Length (mm)	No. of SMB
100	0
110	1
120	3
130	14
140	10
150	8
160	3
170	3
180	1
190	4
200	9
210	6
220	13
230	8
240	7
250	10
260	13
270	8
280	7
290	14
300	11
310	11
320	6
330	4
340	1
350	1
360	1
370	2
380	1
390	0
400	1
410	0
420	0
430	1
440	0
450	0
Total	154
PSD	44
# tagged	81
# returned	10
return	12.3

Table 13. Summary of bass tagging and tag returns in the Snake River between rkm 280 and rkm 343 in 1992.

Date	Location	# tagged	# returned	% return
April 22	rkm 333	16	1	6.2
April 22	rkm 341	9	3	33.3
April 24	rkm 304	36	6	17.0
May 7	rkm 299	20	0	0
Total		81	10	12.3

Table 14. Comparison of length frequency, number, and size distribution of smallmouth bass collected by electrofishing 1.25 hours in the same location on the Snake River at Lewiston, Idaho, in 1991 and 1992.

Length (mm)	June 4, 1991	June 10, 1992
50	0	0
60	0	0
70	0	10
80	0	11
90	0	8
100	0	8
110	2	6
120	1	7
130	5	6
140	15	10
150	11	20
160	7	9
170	2	7
180	3	3
190	9	3
200	13	3
210	13	3
220	5	3
230	2	3
240	2	4
250	0	3
260	0	2
270	0	2
280	0	1
290	0	2
300	0	0
Total	90	134
PSD	0	0.09
CPUE	72.0	107.2

Table 15. Fork and total length, tag numbers, and date and location of white sturgeon tagged in the Snake River below Hells Canyon Dam during the 1991-1992 field season.

Date	Fork length (cm)	Total length (cm)	PIT tag #	Floy tag #	River KM
10/8/91	173	191	--	1636	296
3/5/92	198	213	7F7F427941	1637	381
3/27/92	103	115	7F7F441E72	1638	362
3/28/92	126	140	7F7F42600A	1639	365
3/28/92	64	71	7F7F427702	1640	365
3/29/92	159	175	7F7F42797C	1641	302
3/29/92	167	185	7F7F42711B	1642	302
4/6/92	86	97	7F7F427B05	1643	260
4/9/92	119	129	7F7F42767D	1644	290
4/11/92	93	104	7F7F3D494F	1645	291
4/11/92	121	133	7F7F427528	1646	302
4/11/92	218	244	7F7F45774D	1647	302
4/12/92	120	137	7F7F427125	1648	264
4/20/92	213	231	7F7F425C58	1649	302
5/7/92	--	155	7F7F426555	1650	302
6/14/92	193	213	7F7F443219	1651	302
6/17/92	243	259	7F7F427963	1654	291
6/17/92	101	113	7F7F443351	1653	290
6/17/92	218	243	7F7F426044	1652	296
6/23/92	112	123	7F7F427B26	1655	336
6/23/92	105	117	7F7F427512	1656	331
6/24/92	126	138	7F7F3F6459	1657	319
6/28/92	168	191	7F7F441F6E	1659	381
6/29/92	166	187	7F7F426071	1658	290
6/29/92	221	251	7F7F442A0D	1660	381
6/30/92	187	206	--	1661	365
8/8/92	135	151	7F7D0D6739	--	339
8/9/92	145	162	7F7D0D657E	--	310
8/10/92	110	119	7F7D0D776C	--	339
8/10/92	129	141	7F7D0D6DOF	--	349
8/18/92	96	110	7F7D0D6A15	--	296
8/18/92	193	213	7F7D0D6D01	--	290
8/31/92	91	107	7F7D0D5D10	--	325
9/3/92	154	173	7F7DOA2DOF	--	283
9/3/92	122	133	7F7D0D695A	--	283
9/3/92	86	93	7F7D000014	--	296
9/18/92	189	208	7F7D0D742C	--	267

Table 16. Breakdown of size category of white sturgeon tagged in the Snake River below Hells Canyon Dam, 1991-1992.

Length (cm)	< 91	91 to 183	> 183
No. of sturgeon	1	22	14
Percent of catch	2.7	59.5	37.8

Salmonid Sampling And Diet Analysis

Methods

We sampled residualized hatchery steelhead smolts and wild rainbow trout in the Snake River using pulsed DC current from a portable generator and a Coffelt VVP-2E pulsator. Booms and electrodes were mounted on a 5.5 m aluminum boat. Steelhead smolts were also collected using traditional hook and line methods.

All trout were measured for length. Residualized hatchery steelhead smolts were killed and their stomachs dissected for diet analysis. Wild rainbow trout were released unharmed. Hatchery steelhead smolts were identified by a missing adipose fin.

Results

We collected 126 rainbow trout from the Snake River between Hells Canyon Dam and the Salmon River in April, May, and June 1992 (Table 17). All hatchery steelhead smolts' stomachs were examined by dissection. Hatchery steelhead smolt diet consisted of insects, mostly caddis fly adults, and some green algae. No fish were found in the stomach samples.

SALMON RIVER

Methods

We sampled smallmouth bass and rainbow trout in the Salmon River using pulsed DC current from a portable generator and a Coffelt VVP-2E pulsator. Booms and electrodes were mounted on a 5.5-m aluminum boat.

We tagged bass 305 mm (12 inches, legal size) and larger with \$5 reward Floy anchor tags. Returned tags were used to estimate angler exploitation. We tagged bass below 305 mm with regular Floy tags to monitor movement.

Stomachs of known hatchery-origin rainbow trout were examined by dissection.

Results

Smallmouth Bass

We collected 246 smallmouth bass in the Salmon River between Riggins and White Bird (roaded section) with electrofishing gear on June 18 and 19 (Table 18). PSD of this sample was 38. Of the fish 200 mm and larger, 11% were 305 mm and larger (legal size). We tagged 17 of the legal size fish with \$5 reward tags. None of the reward tags were turned in by anglers.

We tagged 32 smallmouth bass in the lower 5 km of the Salmon River on August 5. We will use these marks to attempt to document movement into the Snake

TEXT

Table 17. Length frequencies of hatchery steelhead smolts and wild rainbow trout captured in the Snake River below Hells Canyon Dam, 1992.

Length (mm)	-----Hatchery steelhead -----			Total hatchery steelhead	Wild RBT Electrofish May 7
	Electrofish Apr. 21-22	Electrofish May 5 & 29	Hook & line June 28-29		
100	0	0	0	0	0
110	0	0	0	0	0
120	0	0	0	0	0
130	0	0	0	0	0
140	1	0	0	1	0
150	1	0	0	1	0
160	2	0	0	2	0
170	3	0	0	3	0
180	1	0	1	2	3
190	3	2	0	5	1
200	0	0	2	2	1
210	4	3	2	9	0
220	10	3	0	13	0
230	12	5	0	17	0
240	7	2	1	10	0
250	4	3	1	8	0
260	2	3	2	7	0
270	2	2	6	10	0
280	1	1	6	8	0
290	1	0	3	4	1
300	1	0	4	5	0
310	0	0	1	1	0
320	0	1	4	5	0
330	0	0	4	4	0
340	1	0	1	2	0
350	0	0	2	2	0
360	0	0	0	0	0
370	0	0	1	1	0
380	1	0	0	1	0
390	0	0	0	0	0
400	0	0	0	0	0
410	0	0	0	0	0
420	0	0	0	0	0
430	2	0	0	2	0
440	1	0	0	1	0
450	0	0	0	0	0
Total	60	25	41	126	6

Table 18. Length frequency of smallmouth bass collected by electrofishing in the Salmon River between Riggins and White Bird on June 18 and 19, 1992.

Length (mm)	No. of SMB
100	1
110	0
120	4
130	6
140	4
150	6
160	12
170	3
180	2
190	4
200	1
210	4
220	7
230	15
240	23
250	27
260	23
270	25
280	28
290	25
300	6
310	6
320	6
330	4
340	1
350	1
360	0
370	1
380	0
390	1
400	0
Total	246
PSD	38

River in the spring of 1993. Five of the 32 fish tagged were of legal size. One of these non-reward tags was returned on September 5, 1992.

Rainbow Trout

We sampled 27 rainbow trout in the Salmon River using electrofishing techniques on June 18 and 19 (Table 19).

Adipose-clipped rainbow trout were either residualized hatchery steelhead or Spokane strain rainbow trout stocked in 1990. Twelve rainbow trout with adipose clips were sampled. One fish, 410 mm, was probably a Spokane rainbow from the 1990 plant. The remaining 11 were most likely residualized steelhead.

A left ventral clip was used to mark domestic Kamloops rainbow trout stocked in 1990. Two of these fish were sampled.

All stomachs of hatchery-origin trout were examined by dissection. Diet consisted of aquatic and terrestrial insects and green algae. No fish were found in hatchery trout stomachs. We did not examine the stomachs of wild fish.

TEXT

Table 19. Length frequencies of rainbow trout collected by electrofishing in the Salmon River between Riggins and White Bird, June 18 and 19, 1992.

Total Length (mm)	Adipose clipped	RV clipped	LV clipped	Wild RBT
100	0	0	0	0
110	0	0	0	0
120	0	0	0	0
130	0	0	0	0
140	0	0	0	1
150	0	0	0	0
160	0	0	0	1
170	0	0	0	0
180	0	0	0	3
190	1	0	0	2
200	0	0	0	1
210	1	0	0	1
220	0	0	0	1
230	0	0	0	0
240	2	0	0	0
250	1	0	0	0
260	0	0	0	0
270	2	0	0	0
280	2	0	0	0
290	1	0	0	1
300	0	0	0	0
310	1	0	0	0
320	0	0	0	0
330	0	0	0	0
340	0	0	0	0
350	0	0	0	0
360	0	0	0	1
370	0	0	0	0
380	0	0	0	0
390	0	0	2	0
400	0	1	0	0
410	1	0	0	0
Total	12	1	2	12

JOB PERFORMANCE REPORT

State of: Idaho

Name: Regional Fisheries
Management Investigations

Project: F-71-R-17

Title: Region 2 Technical Assistance

Job: 2-d

Period Covered: July 1, 1992 to June 30, 1993

ABSTRACT

Region 2 fish management personnel offered technical guidance to 7 other agencies and 23 private parties during this report period.

We investigated two fish kills that resulted in monetary damages to the responsible parties.

We sponsored or co-sponsored 12 children's fishing clinics throughout the region on Free Fishing Day. We also sponsored an educational clinic on sturgeon and sturgeon fishing.

We produced and printed informational brochures on fishing the lakes in the Lewiston Orchards Irrigation District and on the Selway River, its fish, and regulations.

Authors:

Tim Cochnauer
Regional Fishery Manager

Ed Schriever
Regional Fishery Biologist

TEXT

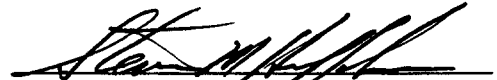
Submitted by:

Ed Schriever
Regional Fishery Biologist

Tim Cochnauer
Regional Fishery Manager

Approved by:

IDAHO DEPARTMENT OF FISH AND GAME

A handwritten signature in black ink, appearing to read "Steven M. Huffaker", written over a horizontal line.

Steven M. Huffaker, Chief
Bureau of Fisheries

A handwritten signature in black ink, appearing to read "Bill Hutchinson", written over a horizontal line.

Bill Hutchinson
State Fisheries Manager